

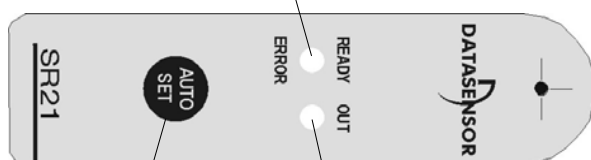
SR21 SERIES

INSTRUCTION MANUAL

Slot sensor

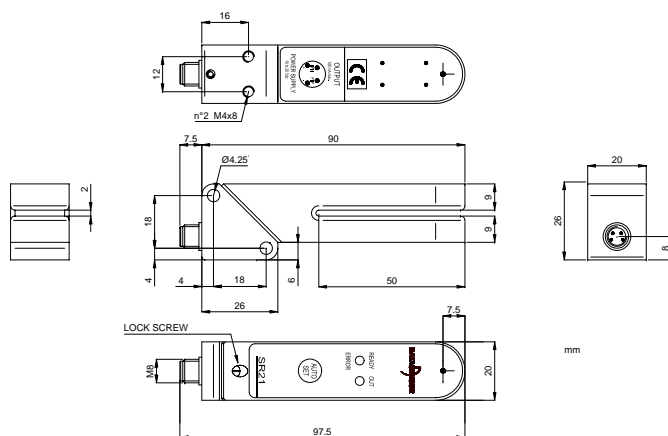
CONTROL PANEL

BI-COLOUR LED
GREEN (READY): operative state indicator
RED (ERROR): error indicator



AUTO SET PUSHBUTTON: automatic setting	LED YELLOW (OUT): output state indicator
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DIMENSIONS

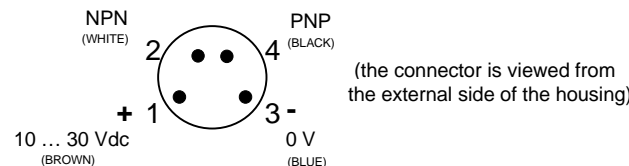


NOTE

To install the sensor with 90° connector, unscrew the lock screw and rotate the block counterclock-wise, when finished tighten the lock screw completely.

CONNECTIONS

M8 Connector



TECHNICAL DATA

Power supply:	10 ... 30 Vdc; protected against inversion of polarity
Ripple:	2 Vpp max.
Consumption (output current excluded):	55 mA max.
Output:	NPN and PNP on different pins; pull up/down resistance = 10K Ω
Output current:	100 mA max. with short-circuit protection
Saturation voltage:	1 V max. with NPN 2 V max. with PNP (values at peak output current)
Response time:	66 μ s max. (SR21-AH/AR/AV) 33 μ s max. (SR21-AS)
Switching frequency:	7.5 kHz max. (SR21-AH/AR/AV) 15 kHz max. (SR21-AS)
T rise:	1 μ s (NPN; R = 1 K Ω)
	120 μ s (NPN; C = 4,7 nF) internal pull up 10K Ω
T fall:	1 μ s (PNP; R = 1 K Ω)
	120 μ s (PNP; C = 4,7 nF) internal pull down 10K Ω
Humidity:	35 ... 85% rH non condensing
Indicators:	Bi-colour LED READY/ERROR (green/red) OUT LED (yellow)
Keyboard:	AUTO SET pushbutton
Retention data:	EEPROM non-volatile memory
Operating temperature:	0 ... 55°C
Storage temperature:	-20 ... 70°C
Electrical shock protection:	Class 1
Emission frequency:	20 Khz \pm 10% modulated light
Emission type:	880 nm infrared (SR21-AR/AV/AS) red/green visible (SR21-AH)
Ambient light rejection:	according to EN 60947-5-2
Slot width:	2 mm
Detectable object limits:	max. thickness 1.5mm min. width 1mm (SR21-AH/AR) min. width 0.5mm (SR21-AV/AS)
Housing material:	ZAMA
Lens material:	Glass
Protection class:	IP65
Connections:	M8 4 pole connector
Weight:	115 g.

SETTING

Sensor setting

- 1) Place the label or the mark to read in the sensor slot using the reference marks on the tip for alignment.
- 2) Press and hold the AUTO SET pushbutton till the green READY LED turns OFF, this starts the acquisition phase of the object to read which must not be removed till the green LED lights on again.
- 3) When the green READY LED blinks, put the label support or the mark background in the sensor slot using the reference marks on the tip for alignment.
- 4) Press and hold the AUTO SET pushbutton till green READY LED turns OFF, this starts the acquisition phase of the object to read which must not be removed till the green LED blinks.
- 5) The green READY LED continuously ON indicates the setting is completed and the sensor is ready.

Error messages

- Alternate blinking of the green READY LED and the red ERROR LED indicates that the contrast between the label/support or mark/background is insufficient, or that the setting is incorrect. Repeat the sensor setting operation.
- The red ERROR LED blinking indicates the output is in protection mode because of a short circuit. As soon as the cause of the short circuit is removed, the output reactivates and red LED turns OFF.
- The red ERROR LED continuously ON indicates the sensor is damaged and must be replaced.

DECLARATION OF CONFORMITY

We DATASENSOR S.p.A. declare under our sole responsibility that these products are conform to the 2004/108 CEE, 2006/25/CE Directives and successive amendments.




WARRANTY

DATASENSOR S.p.A. warrants its products to be free from defects.
 DATASENSOR S.p.A. will repair or replace, free of charge, any product found to be defective during the warranty period of 36 months from the manufacturing date.
 This warranty does not cover damage or liability deriving from the improper application of DATASENSOR products.

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SR21-IR / SR21-RG

INSTRUCTION MANUAL

CONTROLS

OUTPUT LED (YELLOW)

The yellow LED ON indicates output activation.

READY/ERROR LED (RED/GREEN)

The green LED continuously ON indicates a normal operating condition. Refer to the "SETTING" paragraph for the correct setting phase indications.

The red LED continuously ON or blinking indicates an error status.

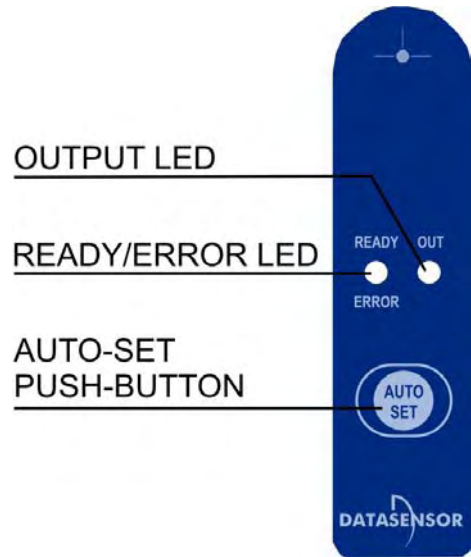
Refer to "ERROR INDICATIONS" paragraph for the correct indications during the different functioning phases.

AUTO-SET PUSH-BUTTON

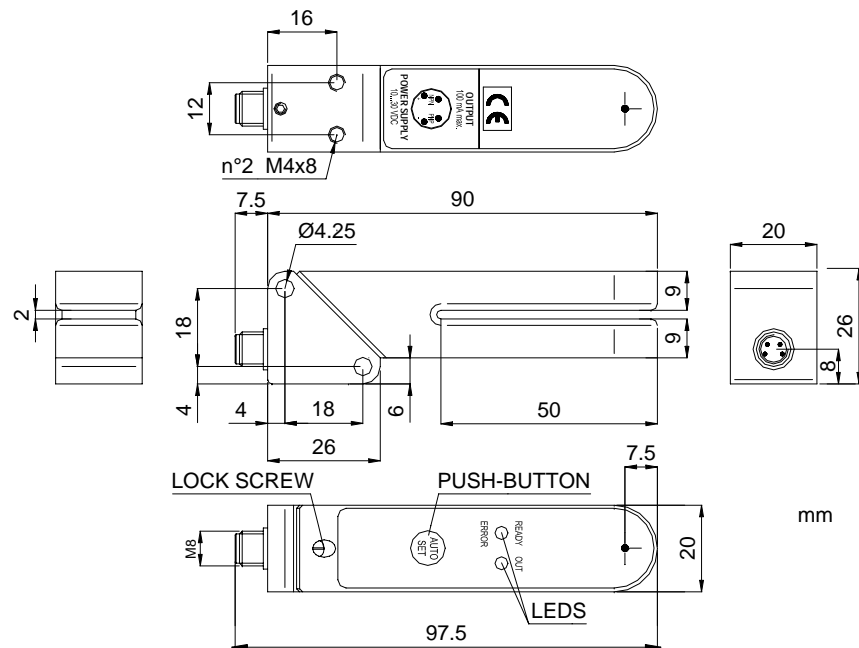
Activates the different setting modes using the READY/ERROR LED indications.

The pressure on the AUTO-SET push-button can be "brief" when pressed for at least 3 sec., or "long" when pressed longer.

Refer to "SETTING" paragraph for operating mode indications.



DIMENSIONS

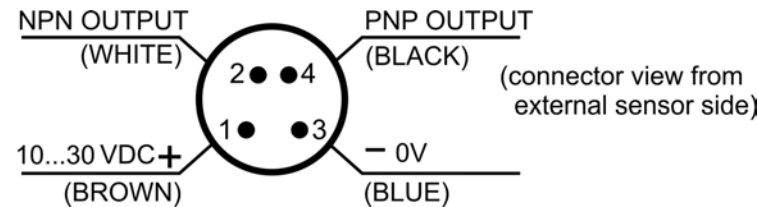


NOTE

To install the sensor using the connector positioned at 90°, unscrew the blocking screw and rotate the fixing block in an anti-clockwise direction. At the end rescrew the blocking screw.

CONNECTIONS

M8 connector



TECHNICAL DATA

Power supply:	10 ... 30 Vdc; reverse polarity protection
Ripple:	2 Vpp max.
Consumption (output current excluded):	55 mA max.
Outputs:	NPN and PNP on different poles; pull up/down resistance= 33 KΩ
Output current:	100 mA max. short-circuit protection
Output saturation voltage:	2 V max. with NPN 2 V max. with PNP (values at maximum output current)
Response time:	20 μs max.
Switching frequency:	25 kHz max.
T rise:	1 μs (NPN; R = 1 KΩ) 120 μs (NPN; C = 4.7 nF) 33 KΩ pull-up internal resistance
T fall:	1 μs (PNP; R = 1 KΩ) 120 μs (PNP; C = 4.7 nF) pull-down internal resistance 33 KΩ
Humidity:	35 ... 85% rH non-condensing
Indicators:	Bicolour READY/ERROR LED (green/red) OUT LED (yellow)
Setting:	AUTO-SET push-button
Data retention:	EEPROM non volatile memory
Operating temperature:	-20 ... 60°C
Storage temperature:	-20 ... 70°C
Emssion frequency:	Modulated light at 50 kHz ±10%
Emission type:	infrared 880 nm visible red/green (633 nm/570 nm)
Ambient light rejection:	EN 60947-5-2
Slot width:	2 mm
Detectable object limits:	Min. 0.5mm width
Housing material:	ZAMA
Lens material:	glass
Mechanical protection:	IP65
Connections:	M8 4-pole connector
Weight:	115 g.

SETTING

Static setting (MANUAL)

Recommended in presence of transparent irregular profiles and requires a separate acquisition of the label and of the support with manual positioning.

The best result is obtained acquiring the most transparent area of the label and the most opaque area of the support.

Setting steps:

- 1) With LED continuously ON, position the label in the sensor slot if the output has to be activated in correspondence of the label (NORMAL output), or position the support if the output has to be activated in correspondence of the support (INVERTED output). Use the specific references for centring.
- 2) Briefly press AUTO-SET. The green and yellow LEDs turn OFF. The object acquisition phase begins. The object must not be moved until the green LED doesn't blink rapidly.
- 3) When the green LED blinks position the second object (support or label) in the sensor slot using the specific references for centring.
- 4) Briefly press AUTO-SET. The green LED turns OFF. The detection of the second object begins. The object must not be moved until the green LED doesn't turn ON continuously.
- 5) The green READY LED continuously ON indicates that the sensor has detected a sufficient contrast between the label and the support. The sensor can function with the new setting. A different indication signals an error due to insufficient contrast.

Static setting of only the support (MANUAL)

Recommended in presence of less critical conditions where the label is totally opaque and the output has to be activated in correspondence of the label. The detection of only the support has be carried-out with manual positioning.

Setting steps:

- 1) With LED continuously ON, position the support in the sensor slot, slot using the specific references for centring.
- 2) Briefly press AUTO-SET. The green and yellow LEDs turn OFF. The support acquisition phase begins. The support must not be moved until the green LED doesn't blink rapidly
- 3) When the green LED blinks, press AUTO-SET until the green LED blinks rapidly three times. Release the push-button.
- 4) The green READY LED continuously ON indicates that the sensor has detected a sufficient support transparency degree. The sensor can function with the new setting, activating the output in correspondence of the label (NORMAL output). A different indication signals an error due to insufficient transparency.

Dynamic setting with NORMAL or INVERTED output

The programming has to be carried-out during normal movement of the label ribbon inside the sensor slot. Recommended for labels and supports with a rather uniform transparency degree.

Setting steps:

- 1) With green LED continuously ON, start the movement of the label ribbon in the sensor slot.
- 2) Press AUTO-SET until the green LED blink slowly.
- 3) Release the push-button. The sensor acquires the transparency degree of both the moving labels and support in approximately 2 sec. cycles. Leave the sensor in this acquisition phase for the time necessary to guarantee the detection of the major number of points possible. The duration depends on the ribbon speed and dimensions of the labels and support.
- 4) **Setting with NORMAL output:** briefly press AUTO-SET. The green READY LED continuously ON indicates that the sensor has detected a sufficient contrast between the label and support. The sensor begins to function with the new setting and the output is activated in correspondence of the label. A different indication signals an error due to insufficient contrast.
- 5) **Setting with INVERTED output:** press AUTO-SET until the green LED blinks rapidly three times. Release the pus-button. The green READY LED continuously ON indicates that the sensor has detected a sufficient contrast between the label and the support. The sensor begins to function with the new setting and the output is activated in correspondence of the support. A different indication signals an error due to insufficient contrast.

ERROR INDICATIONS

READY/ERROR LED blinking with slow red and green alternation: indicates that the setting (static or dynamic) has failed due to insufficient transparency or contrast between label and support. In this case the sensor maintains the previous setting and returns to normal functioning pressing and releasing AUTO-SET.

READY/ERROR LED red blinking at average speed: during normal functioning and only with active output, indicates a short-circuit or overload of the outputs or insufficient power supply. The indication disappears when the cause is removed.

PUSH-BUTTON BLOCKING AND UNBLOCKING

The push-button can be blocked to avoid accidental movements during normal sensor functioning. The block can be maintained even after the turning OFF and turning ON of the sensor. The blocking and unblocking operations are given below:

- 1) With sensor turned OFF press AUTO-SET
- 2) Re-power sensor keeping the push-button pressed. The sensor inverts the block status: if the push-button was unblocked the bock is activated and the red LED is continuously ON, if the push-button was blocked the sensor unblocks it and at sensor re-powering the green LED is continuously ON.
- 3) The sensor begins to operate with normal functioning. The setting can not be modified if the push-button is blocked.

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WARRANTY

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